REMARKS

Claims 1-4, 7-17 and 20-28 are pending. By this response, claims 1, 7, 8, 13, 14, 20, 21 and 26 are amended and claims 5, 6, 18 and 19 canceled. Reconsideration and allowance based on the above amendments and following remarks are respectfully requested.

The Office Action rejects claims 1-3, 5-8, 11, 13-16, 18-24 and 26-28 under 35 U.S.C. § 103(a) as being unpatentable over Elliot et al. (U.S. Patent 5,727,066); claims 4, 10 and 17 under 35 U.S.C. § 103(a) as being unpatentable over Elliot in view of Katayama et al. (U.S. Patent 6,546,105); claim 9 under 35 U.S.C. § 103(a) as being unpatentable over Elliot in view of Ueno et al. (U.S. Patent 5,960,390); and claims 12 and 25 under 35 U.S.C. § 103(a) as being unpatentable over Elliot and Baumgarte et al. (U.S. Patent Publication 2003/0219130) in view of Nakayama (U.S. Patent 4,700,389). These rejections are respectfully traversed.

Claims 27 and 28 recite, *inter alia,* A speaker-characteristic compensation method, for a mobile terminal device having *N* speakers contained in a case, in which a speaker emission signal Si emitted from i-th speaker is given by Equation 31, by means of a matrix *H* including a transfer characteristic Hij through which a driving signal Sdi for driving the i-th speaker is transformed by at least inner-case acoustic coupling and emitted from j-th speaker, and a transfer characteristic Hii through which a driving signal Sdi for driving the i-th speaker is transformed by at least an amplifier characteristic or a speaker characteristic and emitted from the i-th speaker,

$$\begin{bmatrix} S_1 \\ S_2 \\ \cdots \\ S_N \end{bmatrix} = \mathbf{HSd} = \begin{bmatrix} H_{11}, H_{21}, \cdots, H_{N1} \\ H_{12}, H_{22}, \cdots, H_{N2} \\ \cdots \\ H_{1N}, H_{2N}, \cdots, H_{NN} \end{bmatrix} \begin{bmatrix} Sd_1 \\ Sd_2 \\ \cdots \\ Sd_N \end{bmatrix} \quad (31)$$

wherein the driving signal Sdi for the i-th speaker is created by processing an input signal Xi for the i-th speaker with a filter characteristic G, given by Equation 32, that is based on a cofactor Qij of an (i, j) component of the matrix H.

$$\begin{bmatrix} Sd_1 \\ Sd_2 \\ \cdots \\ Sd_N \end{bmatrix} = \mathbf{G} \begin{bmatrix} X_1 \\ X_2 \\ \cdots \\ X_N \end{bmatrix} \quad \text{where} \quad \mathbf{G} = a \begin{bmatrix} Q_{11}, Q_{12}, \cdots, Q_{1N} \\ Q_{21}, Q_{22}, \cdots, Q_{2N} \\ \cdots \\ Q_{N1}, Q_{N2}, \cdots, Q_{NN} \end{bmatrix} \tag{32}$$

Claims 1 and 14 recite, *inter alia*, wherein the first direct processing means is based on a transfer characteristic through which a driving signal for driving the one speaker is transformed by at least an amplifier characteristic or a speaker characteristic and emitted from the one speaker, the first cross processing means is based on a transfer characteristic through which a driving signal for driving the one speaker is transformed by at least inner case acoustic coupling and emitted from the other speaker, wherein the second direct processing means is based on a transfer characteristic through which a driving signal for driving the other speaker is transformed by at least an amplifier characteristic or a speaker characteristic and emitted from the other speaker, and the second cross processing means is based on a transfer characteristic through which a driving signal for driving the other speaker is transformed by at least inner case acoustic coupling and emitted from the one speaker.

Applicants respectfully submit that Elliot fails to teach the above noted features.

Elliot, as illustrated at Col. 4 – Col. 5, is provided to obtain the same listening characteristics at both ears of the listener who is located a distance from the speakers. Equation 1 is a matrix which although looks like the matrix

of Applicants claims 27 and 28, the actual data used (matrix elements) are very different from what Applicants claim.

In Elliot, X_1 and X_2 are recorded signals produced at a listeners ears, not signals for transmission through speakers. The transfer function C_{IM} represent the path from the loud speaker to the ears of a listener. H_{MK} represent filter elements where A_{21} and A_{12} provide cross talk cancellation present in the listening room.

As noted above with respect to claims 27 and 28, the speaker signal is defined as transfer characteristic H_{IJ} regarding the inner case acoustic coupling which occurs in multiple speakers within a closely defined case of a mobile terminal device. Further, the transfer characteristic H_{II} also transforms the driving signal according to the amplifier characteristics or speaker characteristics. Elliot does not teach using transfer characteristics associated with inner case acoustic coupling and speaker or amplifier characteristics.

Applicants note that independent claims 1 and 14 also recite features associated with the transfer characteristics associated with inner case acoustic coupling and speaker or amplifier characteristics which are not taught by Elliot.

Further, as noted with regarding to claims 27 and 28, the driving signals are further transformed by processing them and using a transfer characteristic that is based on a cofactor Q_{IJ} which comes from the above-noted matrix H.

The Examiner refers to equations 1-3 of Elliot to teach Applicants claim matrices and transform functions. However, as shown above, Elliot's matrices do not utilize the same elements in the matrices and transfer functions as claimed by Applicants and thus cannot come to the same conclusions. The equations of Elliot are not the same as claimed by Applicants and thus

although matrices are used in Elliot for the intended purpose of canceling crosstalk, this purpose is uniquely different as it relates to Elliot performing cancellation for a noise heard across a room and does not perform it for inner case coupling and with speaker or amplifier characteristics within such confined space. Thus, Elliot's system cannot accomplish the intended purpose of Applicants claimed invention to address the crosstalk within a mobile terminal device which includes inner case coupling.

In view of the above, Applicants respectfully submit that Elliot fails to teach the features of independent claims 1, 14, 27 and 28 as required. Further, Katayama, Ueno, Baumgarte and Nakayama fail to remedy the deficiencies of Elliot as each of these references are provided to teach aspects of dependent claims not associated with the deficient features of Elliot. Accordingly, reconsideration and withdrawal of the rejections are respectfully requested.

Conclusion

For at least the above reasons, Applicants respectfully submit claims 1-4, 7-17 and 20-28 are distinguishable over the cited art. Favorable consideration and prompt allowance are earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Chad J. Billings, Reg. No. 48,917 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§ 1.16 or 1.14; particularly, extension of time fees.

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Respectfully submitted,

By _____
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